Building Safety Division
City of Duluth

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Building Safety Division
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Insulated Concrete Form Foundations (ICFs)

ICF foundations are permitted by the International Residential Code. Plans must be prepared to show compliance with the provisions in the Code, designed according to Tables 404.4(1-3), OR according to the manufacturer's engineered design. Wall thickness, height of unbalanced backfill, soil type, product name and reinforcing specification must be clearly indicated on plans. If the manufacturer's design is used, the design information, including tables and instructions, must be submitted with the permit application and plans.

R404.4
Insulating concrete form (ICF) foundation walls shall be designed and constructed in accordance with the provisions of this section or in accordance with the provisions of ACI 318. When ACI 318 or the provisions of this section are used to design insulating concrete form foundation walls, project drawings, typical details and specifications are not required to bear the seal of the architect or engineer responsible for design unless otherwise required by the state law of the jurisdiction having authority.

R404.4.1
Applicability limits. The provisions of this section shall apply to the construction of insulating concrete form foundation walls for buildings not greater than 60 feet (18 288 mm) in plan dimensions, and floors not greater than 32 feet (9754 mm) or roofs not greater than 40 feet (12 192 mm) in clear span. Buildings shall not exceed two stories in height above-grade with each story not greater than 10 feet (3048 mm) high. Foundation walls constructed in accordance with the provisions of this section shall be limited to buildings subjected to a maximum ground snow load of 70 psf (3.35 kN/m^2) and located in Seismic Design Category A, B or C.

Waterproofing ICFs

Exterior foundation walls that retain earth and enclose habitable or usable spaces located below grade shall be waterproofed with a membrane extending from the top of the footing to the finished grade. The joints in the membrane shall be lapped and sealed with an adhesive compatible with the waterproofing membrane.
Organic solvent based products such as hydrocarbons, chlorinated hydrocarbons, ketons and esters shall not be used for ICF walls. Such products are not compatible with the EPS and will deteriorate the foam.
The foundation waterproofing product or method must be specified on plans. Verify before choosing the product that it is compatible with the ICF foam product.

Interior finish

A thermal barrier shall be provided on the building interior in accordance with Section R318.1.2:

R318.1.2
Foam plastic, except where otherwise noted, shall be separated from the interior of a building by minimum 1/2-inch (12.7 mm) gypsum board or an approved finish material equivalent to a thermal barrier to limit the average temperature rise of the unexposed surface to no more than 250ºF (121ºC) after 15 minutes of fire exposure to the ASTM E 119 standard time temperature curve. The gypsum board shall be installed using a mechanical fastening system in accordance with §RR702.3.5. Reliance on adhesives to ensure that the gypsum board will remain in place when exposed to fire shall be prohibited.